

Museum Holdings of the Broad-headed Snake *Hoplocephalus bungaroides* (Squamata: Elapidae)

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The broad-headed snake *Hoplocephalus bungaroides* (Schlegel, 1837) is a highly endangered species endemic to the Sydney basin. We attempted to track down the whereabouts of museum specimens of this snake by contacting mainly Australian, European and North American curators of natural history museums and university herpetological collections. We received replies from 200 institutions, and from these we present details of 159 specimens from 27 museums in 11 countries reported to us as *H. bungaroides*. Countries include Australia (108 specimens), Germany (13), the United States (9), United Kingdom (7), France (4), Belgium (5), the Netherlands (5), Austria (3), Denmark (3), Italy (1), and Switzerland (1). At least 47 specimens are from the 19th Century, and accurate locality records were available for 98 specimens. Obviously, all of the specimens have value insofar as they may provide important biological data that will be useful to researchers working on the future conservation of this snake. Many of these specimens also provide important historical evidence of the species' past distribution.

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INTRODUCTION

The broad-headed snake *Hoplocephalus bungaroides* is possibly the most endangered snake in Australia, with research indicating there are serious concerns for its future conservation (Shine and Fitzgerald 1989; Webb and Shine 1997, 1998a,b; Goldingay 1998; Shine et al. 1998; Goldingay and Newell 2000; Webb et al. 2002; Newell and Goldingay 2005). It has a highly restricted distribution within the Sydney basin where it is dependent on habitats characterised by sandstone cliffs, ridges and outcrops (Krefft 1869; Longmore 1989; Cogger 2000; Swan et al. 2004). This species is threatened by habitat loss through urbanisation, removal of bush rock for landscaping and ongoing degradation of rocky habitat caused by hikers and reptile poachers (Hersey 1980; Shine and Fitzgerald 1989; Cogger et al. 1993; Goldingay and Newell 2000; Webb and Shine 1998a, 2000; Newell and Goldingay 2005).

The decline of *H. bungaroides* was noted as early as 1869 by Gerard Krefft (1830-1881), Curator and

Secretary of the Australian Museum (Whitley 1961, 1969), in *The Snakes of Australia* (Krefft 1869), the first monograph published on Australian snakes. Krefft (1869) considered *H. bungaroides* (as its junior synonym *Hoplocephalus variegatus*) to be "very local" with specimens found only "in the immediate neighbourhood of Sydney", that is, from Port Jackson to Botany Bay, on the shores of Middle Harbour, and at Lane Cove and Parramatta inlets. Krefft stated that this snake is "not so numerous as they were six or eight years ago" (i.e. around 1861-1863) and the decline was attributed to "their haunts having been invaded by the builder and the gardener". Krefft also stated that "many hundreds" of *H. bungaroides* specimens had been distributed to unnamed "kindred institutions". These statements sparked our curiosity, and subsequently we made considerable effort to locate these specimens. In so doing, we also aimed to gather information on all museum holdings of *H. bungaroides* because this may offer a rich source of data potentially useful to the future conservation of this endangered species.

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MATERIALS AND METHODS

We reviewed the annual reports of the Australian Museum for mention of reptile specimens received and exchanged by Krefft during his tenure as Curator and Secretary (1861-1874) (see Appendix 1). We also searched for information in the archives of the Australian Museum, including examination of Krefft's correspondence and the 'Exchange Register' (pre 1874; series 58, Volume 1). Finally, we surveyed other museums and related institutions with herpetological collections, particularly those in Australia, Belgium, Czech Republic, France, Germany, India, Italy, Netherlands, Portugal, Spain, United Kingdom (UK) and the United States (US) since Krefft did send reptile specimens to these countries (Appendix 1). Museums in these and other countries were identified using online directories and also published lists in Leviton et al. (1980, 1985) and Roselaar (2003). Curators or collection managers were asked via email whether there were any *H. bungaroides* (or its synonym *H. variegates*) in their museums. If *H. bungaroides* was present, data were requested on numbers of specimens held; catalogue / registration numbers; collection locality; collector or donor name; collection date; and other details recorded with the specimens. Additionally, photographs of the specimens were requested to confirm that the correct identifications had been made. In relation to photographs, for one museum in France (Musée de Zoologie, Strasbourg) we received reports about two *H. bungaroides* specimens in their collection, but the photographs supplied did not reveal the striking appearance of *H. bungaroides* and we believe they represent the Stephens banded snake *H. stephensii*. We are confident about the identification of all other museum specimens listed, except for those at Zoological Museum, University of Liege (Belgium) because photographs of the five *H. bungaroides* in their collection were not supplied.

RESULTS

The annual reports of the Australian Museum for 1861-1874 did not provide details of "many hundreds" of *H. bungaroides*. Descriptions of species exchanges in these reports lack detail, and indicate, at a minimum, that *H. bungaroides* was definitely sent out to only three places (see Appendix 1). The reports mention that reptiles were shipped to a number of museums and specimen dealers in this period, but the specific composition of the shipments was generally not published. Recipients of Krefft's reptiles included

his colleagues in Mauritius (Victor de Robillard) and India (Richard Henry Beddome); one learned society (Royal Society of Tasmania); four specimen 'dealers' - J.C. Puls (Belgium), C.L. Salmin (Hamburg, Germany), Václav Frič (Prague, Czech Republic), and Robert Damon (Weymouth, England); and at least nine museums, i.e. those in Hamburg and Berlin (Germany), Leiden (Netherlands), Madras (=Chennai, India), Milan (Italy), Paris (France), Madrid (Spain), London (UK), and Harvard at Cambridge (US).

The pre-1874 Exchange Register in the Australian Museum archives (series 58, Volume 1) contained some inbound 1860s correspondence addressed to Krefft from dealers such as J.C. Puls and some museums, such as the Muséum National d'Histoire Naturelle, Paris and the Museum of Comparative Zoology, Cambridge. This Register also lists some, but not all, specimens sent on exchange by Krefft and also his predecessor George Bennett. These lists include an entry that a single *H. bungaroides* was sent to the Government Museum at Madras (=Chennai, India) (see Exchange Register p.16). Whilst this list is undated, it was probably the same consignment listed in the annual report for 1864 (see Appendix 1). The Exchange Register also itemised specimens dispatched to the Royal Society of Tasmania and *H. bungaroides* was absent from this list.

By contacting museums directly, we located 159 specimens reported to us as *H. bungaroides* from 28 institutions in 11 countries (Table 1). Most specimens we found are held in Australia (108 specimens), but a considerable number are in Europe (43 specimens) and the US (9 specimens). Negative responses to our email enquiries were received from 174 institutions (see Appendix 2). There were also 74 other institutions that did not respond to our correspondence, despite more than one request (Appendix 2). We have compiled some detailed information on *H. bungaroides* specimens from many institutions in Australia, Europe and the US (see below).

Australian collections

The Australian Museum, Sydney (AM), has 77 *H. bungaroides* specimens (Table 1; Appendix 3) but none of these are designated type specimens (Shea and Sadlier 1999). Eight of these do not have any locality data and another 5 have an imprecise collection locality recorded as "Sydney". There are 18 AM specimens collected at Waterfall, seven at Nowra, five at Long Bay, six at Royal National Park (NP) (including Bundeena), three at the Blue Mountains, three at Woronora Dam and two at La Perouse. Single AM specimen locality records were recorded for 20 locations (Appendix 3). Twenty four (31 %) of the

Table 1: Specimens of *Hoplocephalus bungaroides* held in Australian and overseas museums.

Institution	Code	<i>n</i>
Australia		
Australian Museum, Sydney	AM	77
Western Australian Museum, Perth	WAM	3
Museum Victoria, Melbourne	NMV	6
South Australian Museum, Adelaide	SAMA	6
Queensland Museum, Brisbane	QM	4
Northern Territory Museum, Darwin	NTM	4
Australian National Wildlife Collection, Canberra	ANWC	3
Macleay Museum, University of Sydney	MMUS	3
Biological Museum, Australian National University	ANU	2
Austria		
Museum of Natural History, Vienna	NMW	3
Belgium		
Zoological Museum, University of Liege	MZULG	5
Denmark		
Zoological Museum, University of Copenhagen	ZMUC	3
France		
Muséum National d'Histoire Naturelle, Paris	MNHNP	4
Germany		
Museum für Naturkunde, Berlin	ZMB	8
Senckenberg Natural History Museum, Frankfurt	SMF	1
Zoologisches Museum, University of Hamburg	ZMH	2
Zoologische Staatssammlung, Munich	ZSM	2
Italy		
Museo Civico di Storia Naturale, Genoa	MSNG	1
Netherlands		
National Museum of Natural History, Leiden	RHNH	5
Switzerland		
Naturhistorisches Museum, Basel	NMB	1
United Kingdom		
Natural History Museum, London	BMNH	6
Oxford University Museum of Natural History	OUM	1
United States		
Field Museum of Natural History, Chicago	FMNH	2
Museum of Comparative Zoology, Harvard University	MCZ	3
National Museum of Natural History, Smithsonian Institution	USNM	2
San Diego Natural History Museum	SDNHM	1
University of Illinois Museum of Natural History	UIMNH	1
Total		159

77 AM specimens do not have collection dates, but presumably some of the undated specimens are very old and derive from the late 19th Century (Krefft's era). The collection dates on the remaining 53 range from 1904 to 1996.

The Macleay Museum (MMUS) holds three *H. bungaroides* that all are believed to be from the late 19th Century. One is from "Mount Wilson" but the collector and date are unknown. It was possibly John Anderson or James Cox since both of these zoologists made collections for MMUS in the Mount Wilson area (Fletcher 1929; Stuart Norrington *pers. comm.*). The only information with the two other MMUS specimens is that they were collected on the "coast near Sydney".

Hoplocephalus bungaroides specimens are also held in all other Australian mainland capital cities. The South Australian Museum, Adelaide (SAMA), has 6 specimens recorded on its collection register, but one of these (R00463) is now missing. This misplaced specimen is recorded as collected on 2 June 1915 at La Perouse and donated to the SAMA by the AM. Other SAMA specimens were from Kuringai Chase, Sydney and Woronora River. The Kuringai Chase specimens are reported to us as having been collected by "W. Irvine" in 1967. We enquired with William (Bill) Irvine (a well-known collector who still lives in Sydney) for details about these but he explained that his field notebooks from 40 years ago had now been destroyed. The Queensland Museum, Brisbane (QM), has four specimens: one from Waterfall; one from Nowra that was held in captivity for a period of time (Queensland Reptile Park); one was captive-bred; and another was confiscated by Queensland Parks and Wildlife Service in 1989. In Canberra, three specimens are in the Australian National Wildlife Collection (ANWC): one from about 1963-1964; the other two from around 1978-1980 (J. Wombey *pers. comm.*). Collection localities are not available for any of these. Also in Canberra, the Museum at the Australian National University (ANU) has two specimens: Waterfall and Tiajuara Falls (22 km from Nerriga), although these have no dates or registration numbers. In Darwin, the Northern Territory Museum (NTM) has four specimens all from the 1970s and collected at Heathcote, Jarra Fall (Nowra), and Woronora Dam. In Melbourne, Museum Victoria (NMV) has six specimens. Four of these were registered sometime between 1900 and 1945, but collection dates are not available. Localities are Helensburg, Long Bay, Middle Harbour, and Coast Range at Botany Bay. The Middle Harbour specimen, at least, possibly originated from, or was known to, Krefft because this collection locality was specifically

referred to by him (Krefft 1869). Two other specimens in NMV collected in 1975 are from Yal Wal (Nowra) and Royal NP. The Western Australian Museum (WAM) has three specimens, all from Woronora Dam in the 1960s and 70s.

European collections

In Germany, there are four museums with records of 13 *H. bungaroides* specimens. The Museum für Naturkunde, Berlin (ZMB) has eight specimens. Two of these were purchased from "Salmin", a dealer in Hamburg who traded with Krefft. They are undated, but it is known from the Annual Reports that Krefft sent Salmin reptiles in 1866 (see Appendix 1). The ZMB also has three specimens labeled "Krefft" specifically. Another two specimens are from 1867 and donated by Richard Schomburgk (1811-1891). Schomburgk was Director of the Botanical Garden in Adelaide from 1865-1891. None of these seven specimens have specific point localities, i.e. either "Australia", "New South Wales" or "Sydney". The eighth specimen in the ZMB was donated by the Berlin Zoo on 12 September 1913, and the original collector and collection place are unknown. In the Zoologisches Museum, University of Hamburg (ZMH), there are two specimens: one from Krefft; the other with no collector details. These specimens are recorded as from "Sydney" and "Australia" respectively. The single specimen in the Senckenberg Natural History Museum, Frankfurt (SMF), from "eastern Australia" was donated in 1911 by "O. Frank". We have no details on "O. Frank" or any other information on where he found his specimen. The Zoologische Staatssammlung, Munich (ZSM) had two *H. bungaroides* from "New South Wales" registered in 1920 and 1928, but these were destroyed during World War Two (D. Fuchs *pers. comm.*).

Seven specimens were found in the UK. Six are preserved in the Natural History Museum, London (BMNH), and one in the Oxford University Museum of Natural History (OUM). One BMNH specimen was presented by the 'Earl of Derby' in 1847 (see also Günther 1858; Boulenger 1896). This was Edward Smith Stanley (1775-1851), the 13th Earl of Derby. Two specimens in the BMNH derive from 1855. One of these was donated by the Zoological Society of London (ZSL), but the collector of this specimen is unknown. It was possibly John Gould, since he collected many specimens in Australia and also worked for ZSL. The second 1855 specimen is from the "collection of Captain Stokes". This was John Lort Stokes, who was on the *Beagle* surveying expedition to Australia from 1837-1843. There is also a specimen in the BMNH registered 1859 that was presented by

“Dr G. Bennett”. This was George Bennett, who was an early Curator of the Australian Museum from 1835-1841, and a Trustee of the Museum from 1853-74. The other two BMNH specimens were purchased from Krefft and were registered on 16 June 1863. The only locality data with these specimens are “New South Wales” or “Australia”. The single specimen in the OUM was collected at “Sydney” by Francis Pascoe (1813 - 1893). Pascoe sailed to Australia in the *Buffalo*, captained by John Hindmarsh (first Governor of South Australia). After Pascoe’s death his large collection of zoological specimens was presented to the OUM by his daughter in 1909 (M. Nowak-Kemp *pers. comm.*).

In France, the Muséum National d’Histoire Naturelle, Paris (MNHP) has four specimens. One of these (no. 7679) is the type of *Alecto variegata* (a junior synonym for *H. bungaroides*), with locality given as “Australia”, collector/donor as Pierre François Kéraudren. This specimen is referred to by Schlegel (1837), Duméril et al. (1854), and Guibé and Roux-Estève (1972). There is also a specimen from Port Jackson donated by “Quoy and Gaimard” (i.e. Jean René Constant Quoy and Paul Gaimard), collected some time prior to 1829 when these French naturalists visited Australia. The actual location data provided to us are for Middle Head. This specimen is also mentioned by Schlegel (1837), Duméril et al. (1854) and Guibé and Roux-Estève (1972). Another MNHP specimen was collected from “Australia” by the French naturalist/specimen dealer Jules Pierre Verreaux some time in the early 1840s (also in Duméril et al. 1854). According to the MNHP donations book, it was received in December 1846. The fourth MNHP specimen is a skull registered as no. 1991-4163. This specimen has no date, collector or locality details, but it is a different specimen to the above three, and it is believed to be from the same era, i.e. 19th Century (I. Ineich *pers. comm.*).

In Austria, three specimens are preserved in the Museum of Natural History, Vienna (NMW). These are NMW 27699:1-3 and are dated between 1863 and 1877. There are no collector or donor names recorded with any of these, and the original label for these specimens indicates “West Australien” (=Western Australia). Photographs of the specimens supplied to the authors confirmed that the identifications are correct. However, the locality data is certainly erroneous. Other Australian snake specimens in the NMW collection were purchased from the dealer “Gerrard”, and it is possible that specimens with confused localities were sold by him, including these three *H. bungaroides* specimens.

In Denmark, three *H. bungaroides* are preserved

in the collection of the Zoological Museum, University of Copenhagen (ZMUC). Two of these are dated 1862 and from “Sydney”, but no collector details are recorded for either specimen. The third from “Australia” was donated to ZMUC by “Dr Günther” in 1867.

In the Netherlands, the National Museum of Natural History, Leiden (RHNH), has five *H. bungaroides* specimens. One of these from “Nouv. Hollande” (Australia) was donated to RMNH by John Gould. Another two specimens recorded as from “Nouv. Hollande” are dated 1849 and were donated by “Frank”. This was probably G.A. Frank, a natural history dealer based in Amsterdam. A specimen from “Botany Head”, dated 1862, was received as a gift from the AM. The fifth specimen was also from the AM, but this has no date and no locality.

Naturhistorisches Museum, Basel, Switzerland (NMB), has one specimen of *H. bungaroides* from “Australia”. It was donated in 1882 by Dr. Fritz Müller and is registered as no. 2188. Müller apparently contributed many purchased or traded herpetological specimens to the NMB in the years between 1880 and 1890 (R. Winkler *pers. comm.*). Advice received was that in this period, Müller worked voluntarily for the NMB and cared for the reptile, amphibian and fish collections.

At the Zoological Museum, University of Liege, Belgium (MZULG), there are five *H. bungaroides* mentioned in the museum register. All arrived between 1856 and 1875 from specialised natural history shops (C. Michel *pers. comm.*). Three of these do not have localities, but two indicate “Melbourne”. If the latter two are truly *H. bungaroides*, then the recorded localities are also incorrect. However, as with the specimens from the NMW further study of MZULG specimens are also required to ascertain whether this is the case.

In Italy, the Museo Civico di Storia Naturale, Genoa (MSNG), has one *H. bungaroides* (8687). The specimen was acquired in 1879 from the Godeffroy Museum of Hamburg (Germany), a private institution founded in 1860 by Johann Cesar Godeffroy (1831-1885). The MSNG acquired specimens from the Godeffroy Museum by means of nine catalogues edited from 1864 till 1884 that listed duplicates put up for sale (G. Doria *pers. comm.*). No locality data are available for the specimen held at MSNG.

North American collections

In the US, there are five museums that together hold nine *H. bungaroides* specimens. The Field Museum of Natural History, Chicago (FMNH), has two specimens both collected at “Waterfall” in

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the 1950s. One was collected by William Hosmer, a well-known herpetologist who worked as a field collector for the FMNH for many years and sold his Australian collection to that museum. It is known that the other FMNH specimen was collected by B Kaspiew, although we have no further information about this person. The Museum of Comparative Zoology, Harvard University (MCZ), has three specimens: one from "New South Wales", received from Krefft in 1876; one from "Australia", received from "W. Keferstein" and registered in 1865; and one from "Gelle, Mt. Wilson, Blue Mountains", received from the AM in 1914 (Loveridge 1934). The National Museum of Natural History, Smithsonian Institution (USNM), has a specimen catalogued in about 1872 with no locality details or collector name. The third from Sydney dated 1911 was received from "Julius Hurter", a Swiss-American naturalist and early Curator of the St. Louis Academy of Sciences. The single specimen in the San Diego Natural History Museum (SDNHM) was originally sent there by the AM on exchange to Van Wallach and Richard Etheridge (San Diego State University) for Wallach's studies on the visceral anatomy of the Australian Elapidae (see also Wallach 1985, 1998). A copy of the "specimen invoice form" shown to the authors was dated 19 January 1982 and indicates that this *H. bungaroides* was a "no data specimen". The single specimen in the University of Illinois Museum of Natural History (UIMNH) has no location recorded with the specimen and was apparently "purchased from the AM" but the date for this transaction is unknown. It was originally catalogued into the very old zoology collection (<1943) and the Curator at the UIMNH suggested that it was probably from the 1920s judging by its very low "Z" catalogue number (006) (C. Philips *pers. comm.*)

DISCUSSION

Of the 159 specimens, accurate locality records were available for only 98 (62 %). The AM contributed 77 while another 25 institutions contributed the remaining 82. Several of the latter (detailed in the notes above) are highly significant: two records for Middle Head (dated <1829; 1935), two for Botany Bay (dated 1862; <1935), one for Long Bay (dated <1935), one for La Perouse (dated 1915), and three for Ku-ring-gai Chase NP (dated 1967). Four of the AM specimens (dated 1904/5) were from the same location at Long Bay as that above and two specimens (undated; 1895) were from the same locations at La Perouse as that above. Significant specimen records

from the AM include those from the western side of the Blue Mountains (Bathurst: dated 1979; Ilford: dated ca. 1962), and from Mudgee (<1964). Other significant records are those from within the vicinity of Shoalhaven Formation geological outcropping along the western and north-western rim of the Sydney Geological Basin, the presumed limits of the species' distribution. Whilst perhaps the species is absent there today, it gives a clear indication that some of this otherwise presumed habitat was in fact occupied by *H. bungaroides*. With many of these historical records collectors probably gave locations that covered wider districts or the specimens were allocated names of the centres they were brought to from the field. This is likely to be the case for the western records from Bathurst, north of Bathurst and Mudgee.

The specimen locality data were mapped and contrasted with the 67 records in the Atlas of NSW Wildlife (Fig. 1). Two specimens from the AM (dated 1969) and one from SAMA (dated 1973) had as the locality data a site close to the location of the AM itself. We believe the co-ordinates for these three relatively recent specimens to be incorrect, and so excluded them from the map. The distribution of the museum records shows some concordance with the Atlas data. Both databases show aggregations of records in the Katoomba (Blue Mountains), Waterfall-Heathcote and Nowra (Shoalhaven) areas. Surprisingly, 37% of the records in the museum database are from Royal NP (28) and the adjoining Heathcote NP (8) and Garrawarra SRA (1). One location in Royal NP covering an area with a radius of 2 km contributed 23 specimens with collection dates spanning 1951-72. These observations identify and confirm the currently known 'hotspots' of the distribution. We can also contrast Figure 1 with the only map previously published based on Australian Museum holdings (Longmore 1986; 50 specimens). There are about 15 museum records since 1986 including several for the Blue Mountains area (including Wollemi NP). Including these on our finer detail map gives it greater completeness as it includes Atlas records and non-AM museum records.

Hoplocephalus bungaroides is reported from only a small geographic area, as evidenced from the locality data available from museum specimens (Fig. 1). Krefft (1869) reported *H. bungaroides* from Port Jackson, Botany Bay, Middle Harbour, Lane Cove and Parramatta, although as pointed out by Cogger et al. (1993), there have not been records from these areas for quite some time. These data indicate that the only museum specimen from Port Jackson was collected prior to 1829 by Quoy and Gaimard (MNHP 7678).



Figure 1. Geographic distribution of *Hoplocephalus bungaroides* as indicated by museum records and records in the Atlas of NSW Wildlife.

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At Botany Head, a specimen was collected in 1862, and ended up in Leiden, Netherlands, sent there by the AM (i.e. Krefft). There is also an AM specimen from Botany dated 1909 and another in NMV undated, but registered some time between 1900 and 1935. Middle Harbour museum specimens are in the NMV and MNHP. It is likely that the Botany Bay and Middle Harbour specimens were known to Krefft, because these localities were specifically referred to by him (Krefft 1869). Of the 159 *H. bungaroides* specimens located, none had locality details recorded as Lane Cove or Parramatta. Thus, Krefft knew of *H. bungaroides* records from these locations, but it is uncertain whether he collected specimens from there. Krefft did undertake snake collecting in many places in the vicinity of Sydney. Rose Bay, Randwick, Manly, Coogee and Middle Harbour were reportedly principal localities (see correspondence between Krefft and Günther in the archives of the AM).

The annual reports of the AM are unequivocal in reporting that *H. bungaroides* specimens were sent to the Civic Museum, Milan (Italy), in 1865; R.H. Beddome (India) in 1867; and Berlin Museum (Germany) in 1871 (Appendix 1). The Exchange Register also indicates that one *H. bungaroides* was sent to the Madras Museum (now Government Museum, Chennai). In relation to the first of these, we made enquires with the museum in Milan (MSNM; Appendix 2), but *H. bungaroides* could not be found on the shelves or in the collections register. However, we found an *H. bungaroides* in Genoa, Italy (MSNG; Table 1), but this is dated 1879, and it is unknown whether this snake arrived at MSNG via the AM. In relation to Beddome, it is known that he was a naturalist and a British military officer posted to India. His zoological collection together with that of his son-in-law (G. C. Leman) was sold in 1935, and much of this material is now in the National Museums of Scotland (NMS); National Museum of Wales (NMW); and the Natural History Museum, London (BMNH). However, only the latter institution has *H. bungaroides* represented, and these specimens are all dated prior to 1863. Hence, the fate of the AM's 1867 specimen sent to India is also unknown. The AM *H. bungaroides* sent to Berlin in 1871 are still preserved in the ZMB. This museum has three *H. bungaroides* from the AM (Krefft), and another five specimens that arrived via other avenues. Unfortunately we were unable to confirm the presence or absence of *H. bungaroides* at the Government Museum, Chennai, because no advice was received in reply to our correspondence.

The annual reports of the AM were quite vague in terms of the reptiles sent to de Robbillard in Mauritius;

dealers Puls, Salmin, Frič and Damon; and museums in Hamburg, Leiden, Madras, Paris, Madrid, London and Harvard (Appendix 1). Of these, we managed to track down *H. bungaroides* specimens collected/donated by Krefft in Hamburg (ZMH), Leiden (RMNH), London (BMNH) and Harvard (MCZ). We can also confirm that Salmin received some *H. bungaroides* specimens (presumably from Krefft) because two from him were located in Berlin (ZMB). We found no evidence that other high-profile dealers such as Frič (Reiling and Spunarová 2005) received *H. bungaroides* from Krefft or anyone else.

This review demonstrates the value of museum specimens as a source of information on species' distribution (see also Shaffer *et al.* 1998). It's widely known that much Australian material has made its way to 19th Century collections overseas, but the details of such holdings are still not easily accessible and so our contribution at least makes such distributional information available for *H. bungaroides*. Collectively, the museum data show specific records for Sydney's urban areas - Botany Head, La Perouse, Long Bay, Botany, Concord West, Randwick, Middle Harbour and Port Jackson. These localities represent part of this species' historical geographic range that has now been eliminated (see also Swan *et al.* 2004; Shine *et al.* 1998). Increasing our understanding of the historic distribution of *H. bungaroides* is of considerable importance because continued habitat clearing and fragmentation may eliminate this species from an area and without an historic record may lead to disagreement about whether an area is actually suitable for this species. For example, Hoser (1995) categorically refutes that *H. bungaroides* occurred in Ku-ring-gai Chase NP but three *H. bungaroides* specimens in the SAMA have collection details dated 1967 for that locality and there is no reason to doubt their authenticity. Recent surveys there (1998/9) failed to detect *H. bungaroides* (Newell and Goldingay 2005), suggesting it may now be locally extinct.

The museum specimen localities provide a focus for increasing our understanding of the geographic range of *H. bungaroides*. There are three broad areas with aggregations of records: Katoomba (Blue Mountains), Waterfall-Heathcote and Nowra (Shoalhaven area). These areas also show aggregations of records in the Atlas of New South Wales Wildlife (Fig. 1). These may represent areas of highly suitable habitat for *H. bungaroides*. However, there is likely to be collecting bias evident with these data. For example, a few areas near Waterfall contribute 37% of all specimen locations, though records span a 27-year period. Recent detailed surveys in Royal NP (i.e.

Waterfall) indicate that *H. bungaroides* is uncommon there (Goldingay 1998; Goldingay and Newell 2000; Newell and Goldingay 2005; Goldingay and Newell unpubl. data). The failure to detect *H. bungaroides* in recent surveys of national parks surrounding the Hawkesbury River where there are few historic records (Newell and Goldingay 2005) suggests that the species' distribution is much more patchy than what might be predicted based on the presence of apparently suitable sandstone habitats. Further surveys of suitable habitat in areas without records need to be conducted. Records in the north-west of the species' range (Bathurst: dated 1979; Ilford: ca. 1962) also highlight areas where further surveys need to be conducted. These represent the most western records of the species and a population in this area may show some genetic divergence and be of considerable conservation significance. The identification of museum holdings of *H. bungaroides* may be useful for a range of future research studies. This includes morphological research and further descriptions of diet based on stomach content analysis (e.g. Shine 1981a,b, 1983; Keogh 1999). Furthermore, these specimens may provide a source of tissue samples for genetic studies that could contribute to an understanding of whether *H. bungaroides* has lost genetic diversity over time or if unique genotypes have been lost (see also Keogh 1998; Slowinski and Keogh 2000). Our collation here provides a record that will facilitate the use of specimens in this way.

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Appendix 1: Summary notes taken from the Annual Reports of the Australian Museum 1861-1874 with details of reptile exchanges. The notes place an emphasis on reference to the broad-headed snake *Hoplocephalus bungaroides*.

Year	Notes collated from Annual Reports
1861	Kreffft collected reptiles (including 35 snakes, 10 species) for the Australian Museum but specific details were not published.
1862	A Broad-headed Snake (as <i>Hoplocephalus variegatus</i>) was donated by a Mr Coleman.
1863	A Broad-headed Snake (<i>H. variegatus</i>) was donated by a Miss Caroline F. Parsons.
1864	Reptiles were sent to museums in Hamburg, Leiden and Madras, although <i>H. bungaroides</i> was apparently not included.
1865	No <i>H. bungaroides</i> were received; but one <i>H. bungaroides</i> (as <i>H. variegatus</i>) was sent to Civic Museum in Milan. Also in 1865, other reptiles, but not <i>H. bungaroides</i> , were sent to the Paris Museum, and to a Mr J.C. Puls (a dealer in Belgium). <i>A Hoplocephalus</i> was received from a Mr. W. Gorman, but it was not stated whether this was <i>bungaroides</i> or another species. Reptiles were sent out to various museums but the identity of these reptiles was not given. Reptiles went to the Royal Society of Tasmania (20 reptiles), Royal Museum at Madrid (one reptile), Mr C.L. Salmin, Hamburg (50 reptiles and fishes), Paris Museum (34 reptiles and fishes), Civic Museum in Milan (25 reptiles).
1866	
1867	No <i>H. bungaroides</i> were received; one specimen (as <i>Hoplocephalus variegatus</i>) was reportedly sent to Captain R.H. Beddome, Official Conservator of Forests, Madras (=Chennai, India).
1868	No <i>H. bungaroides</i> were received; but a collection of mammals, reptiles and fishes was sent to the Berlin Museum. No indication is provided of the numbers or identity of the species sent.
1869	No <i>H. bungaroides</i> were received; and no reptiles were sent out.
1870	No <i>H. bungaroides</i> were received; however 25 unspecified reptiles were sent to Museum of Comparative Zoology, Harvard University; 128 specimens of reptiles and fishes sent to British Museum; 27 reptiles (plus 12 tortoises) sent to Mr V. Frič, Prague [a dealer]; and 150 specimens of mammals, reptiles, birds and fishes were sent to Mr Robert Damon, Weymouth [a dealer].
1871	No <i>H. bungaroides</i> were received; but a collection of reptiles were sent to "Professor Peters, Director of the Royal Museum in Berlin", including one or more <i>H. bungaroides</i> (as <i>H. variegatus</i>).
1872	A collection of living snakes including <i>H. bungaroides</i> (as <i>H. variegatus</i>) was received from Mr H.H. Bradley. A collection of 29 reptiles was sent to Mr V. de Robillard, Port Louis, Mauritius.
1873	No <i>H. bungaroides</i> were received; and no lists of exchanges were provided. The Board of Trustees stated in this annual report that Krefft had lately not been keeping a list of exchanges.
1874	"A variegated black snake <i>Hoplocephalus variegatus</i> " (= <i>H. bungaroides</i>) was received from Mr Williams, Canterbury; no lists of species sent out

Appendix 2: Institutions in Australia and overseas that do not hold specimens of the broad-headed snake *Hoplocephalus bungaroides* or did not reply to our email correspondence. Entries are listed with Australia first then alphabetically by country and then institution name. R= Reply; Note: institutions marked with a (*) replied that no *H. bungaroides* specimens were held in their museum; institutions with a (-) did not reply despite more than one request.

Institution	R	Institution	R
Australia		Estonia	
Biological Sciences Museum, Macquarie University	*	Museum of Viljandi, Viljandi	-
Queen Victoria Museum and Art Gallery, Launceston	*	Estonian Museum of Natural History	-
Tasmanian Museum and Art Gallery, Hobart	*	Finland	
Zoology Museum, University of New England	*	Finnish Museum of Natural History	*
Zoology Museum, University of Queensland	*	Jyväskylä University Museum	*
Tiëgs Museum, University of Melbourne	*	Zoological Museum, University of Turku	*
Zoology Collection, Royal Melbourne Institute of Technology	*	France	
Zoology Collection, University of Tasmania	*	Laboratoire de Zoologie de la Faculté Des Sciences, Nancy	-
Haswell Zoology Museum, University of Sydney	*	Laboratoire Zoologique, Faculté Des Sciences, Dijon	-
Argentina		Muséum d'Histoire Naturelle, Grenoble	*
Fundación Miguel Lillo	*	Muséum d'Histoire Naturelle, Autun	-
Museo Argentino de Ciencias Naturales	-	Muséum d'Histoire Naturelle, Lyon	*
Museo de La Plata	*	Museum d'Histoire Naturelle, Marseilles	*
Austria		Muséum d'Histoire Naturelle, Nantes	*
Haus der Natur, Salzburg	*	Museum d'Histoire Naturelle, Nice	-
Landesmuseum Joanneum, Graz	*	Muséum d'Histoire Naturelle, Rouen	*
Oberösterreichisches Landesmuseum, Linz	*	Muséum d'Histoire Naturelle, Toulouse	*
Vorarlberger Naturschau Dornbirn	-	Musée de Zoologie, Strasbourg	*
Belgium		Germany	
Musée d'Histoire Naturelle, Tournai	*	Dümmer-Museum, Lembruch	-
Muséum de Zoologie, Brussels	*	Haus der Natur, Cismar	*
Museum voor Dierkunde, Gent University	*	Hessisches Landesmuseum, Darmstadt	*
Museum Zoölogie, Katholieke Universiteit Leuven	*	Jura-Museum, Willibaldsburg	-
Royal Belgium Institute of Natural Sciences, Brussels	*	Museum Alfeld, Langenholzen	-
Bulgaria		Museum für Naturkunde, Dortmund	-
National Museum of Natural History, Sofia	-	Museum Heineanum Halberstadt	-
Canada		Museum Koenig, Bonn	*
Canadian Museum of Nature	*	NABU Lüneburg, Heiligengeiststraße	-
Cowan Vertebrate Museum, University of British Columbia	*	Naturhistorisches Museum, Mainz	*
Nova Scotia Museum of Natural History	*	Naturhistorisches Museum, Rudolstadt	*
Redpath Museum, McGill University, Montréal, Québec	*	Naturkundemuseum Leipzig	-
Royal Alberta Museum	*	Naturkunde-Museum, Coburg	*
Royal British Columbia Museum	*	Naturkundliches Museum Mauritium, Altenburg	-
Royal Ontario Museum	*	Niedersächsisches Landesmuseum, Hannover	-
University of Alberta Museum of Zoology	*	Staatliches Museum für Naturkunde, Görlitz	*
Czech Republic		Staatliches Museum für Naturkunde, Karlsruhe	*
Moravian Museum, Brno	*	Staatliches Museum für Naturkunde, Stuttgart	*
National Museum, Prague	*	Staatliches Museum für Tierkunde, Dresden	*
Denmark		Staatliches Naturhistorisches Museum, Braunschweig	*
Naturhistorisk Museum, Arhus	-	Westfälisches Museum für Naturkunde, Münster	-
Lolland-Falsters Stifismuseum	-	Wiesbaden Naturwissenschaftliche Sammlung, Wiesbaden	-
		Zoological Collection, University of Leipzig	*

Germany continued			
Zoological Collection, University of Rostock			
Zoological Museum, Christian-Albrechts-University	*		
Zoological Museum, Göttingen	*		
Zoological Museum, University of Heidelberg	*		
Zoologischen Museum, Greifswald	*		
Zoologisches Institut, Martin-Luther University	-		
Zoologisches und Tiermedizinisches Museum	*		
Zoology Museum, Universität Tübingen	*		
Greece			
Zoological Museum, University of Athens	-		
Hungary			
Hungarian Natural History Museum, Budapest	*		
India			
Bombay Natural History Society Collection, Bombay	*		
National Museum of Natural History, New Delhi	*		
Zoological Survey of India Collection	*		
Government Museum, Chennai	*		
Indian Museum, Calcutta	*		
Zoological Museum, Andhra University, Waltair	*		
Ireland			
Natural History Museum, Dublin	-		
Trinity College Dublin	*		
Italy			
Bari Zoological Museum, University of Bari	*		
Casalnuovo Monterotaro Civic Museum of Natural History	-		
Civic Museum of the Salento Natural History, Calimera	-		
Civic Museum of Zoology, Rome	-		
Florence Natural History Museum, Florence	*		
Museo di Storia Naturale e del Territorio, University of Pisa	-		
Museo Civico di Storia Naturale di Trieste	-		
Museo Civico di Storia Naturale, Milan	*		
Museo Civico di Storia Naturale, Venice	-		
Museo Civico di Storia Naturale, Verona	-		
Museo dell'istituto Nazionale per la Fauna Selvatica, Bologna	-		
Museo di Zoologia, University of Padova	-		
Museo di Zoologia, Università di Bologna, Bologna	-		
Museo di Zoologia, University of Rome "La Sapienza"	*		
Museo Regionale di Scienze Naturali	-		
Museo Regionale di Scienze Naturali, Turin	-		
Museo Zoologico, Siena	-		
Musco Zoologico, Università di Palermo	-		
Museo Zoologico, University of Naples	*		
Museum of Natural History, Trento	-		
Provincial Museum of Natural History, Foggia	-		
Zoological Collection, Cagliari University	-		
Japan			
Kitakyusyu Natural History Museum	*		
Museum of Natural History, Tohoku University	*		
Osaka Museum of Natural History	*		
Zoology Collection, National Science Museum, Tokyo	*		
Latvia			
Natural History Museum of Latvia, Riga	-		
Luxembourg			
Musée National d'Histoire Naturelle, Luxembourg	-		
Netherlands			
Natuurhistorisch Museum Maastricht	*		
Natuurmuseum Rotterdam, Rotterdam	*		
Zoological Collection, University of Utrecht	*		
Zoological Museum, Amsterdam	*		
New Zealand			
Canterbury Museum, Christchurch	*		
Auckland Museum, Auckland	*		
Otago Museum, Dunedin	*		
Norway			
Museum of Natural History and Archaeology, Trondheim	-		
Stavanger Museum Zoologisk Avdeling, Stavanger	*		
Zoology Collection, University of Bergen	*		
Zoology Museum, University of Oslo	*		
Poland			
Museum and Institute of Zoology, Warsaw	-		
Natural History Museum, University of Wrocław	*		
Polish Academy of Sciences	*		
Zoological Museum, Jagiellonian University, Kraków	*		
Portugal			
Centro de Zoologia, Lisbon	*		
Museu de História Natural, University of Porto	*		
Museu Municipal do Funchal, Madeira	-		
Museu Nacional de História Natural, University of Lisbon	-		
Museu Zoológico e Antropológico, University of Coimbra	-		
Natural History Museum, Coimbra	-		
Romania			
Brukenthal Museum, Sibiu	*		
Natural History Museum, Bucharest	*		
Zoological Museum, Babes-Bolyai University	*		
Russia			
Museum of Natural History, Kharkov University	-		
Siberian Zoological Museum, Russia	*		
State Darwin Museum, Moscow	-		
Zoological Museum, Moscow State University	-		
Zoological Museum, Russian Academy of Sciences	*		

Spain	Durangaldeko Natur Zientzien Museoa, Durango	
	“Luis Iglesias” Natural History Museum	
	Musco de Zoológica, Barcelona	
	Museo Nacional de Ciencias Naturales, Madrid	
Slovakia		
	Saritske Museum, Bardejov	
Slovenia		
	Slovenian Museum of Natural History, Ljubljana	
South Africa		
	Albany Museum, Grahamstown	
	Durban Museum, Durban	
	McGregor Museum, Kimberley	
	Natal Museum, Pietermaritzburg	
	National Museum, Bloemfontein	
	Port Elizabeth Museum	
	South African Museum, Cape Town	
	Transvaal Museum, Pretoria	
	Zoological Museum, University of Stellenbosch	
	Zoology Museum, University of Witwatersrand	
Sweden		
	Swedish Museum of Natural History	
	Zoological Museum, Lund University	
	Göteborg Natural History Museum, Göteborg	
Switzerland		
	Muséum d’Histoire Naturelle, Geneva	
	Natural History Museum, Bern	
	Natural History Museum, Fribourg	
	Zoological Museum, University of Zurich	
	Naturnuseum, St. Gallen	
	Musée de Zoologie, Lausanne	
	Musée d’Histoire Naturelle, La Chaux-de-Fonds	
	Naturnuseum, Solothurn	
United Kingdom		
	Bell Pettigrew Museum, University of St Andrews	
	Bolton Museums, Bolton (Manchester)	
	Booth Museum of Natural History, Brighton	
	Bristol City Museum and Art Gallery, Bristol	
	Cole Museum of Zoology, Berkshire	
	Grant Museum of Zoology, University College London	
	Hampshire County Museums Service, Winchester	
	Hancock Museum, Newcastle	
	Hereford Museum and Art Gallery	
	Horniman Museum, London	
	Hunterian Museum and Art Gallery, Glasgow, Scotland	
	Hunterian Museum at the Royal College of Surgeons, London	
	Ipswich Museum, Ipswich	

	John Moore Countryside Museum, Gloucestershire	
	Kendal Museum, Kendal	
	Kings College, London	
	Leeds City Museum, Leeds	
	Linnean Society, London	
	Liverpool Museums	
	Manchester Museum, University of Manchester	
	National Museum of Wales, Cardiff	
	National Museums of Scotland, Edinburgh	
	Natural History Collection, University of Edinburgh	
	Plymouth City Museum and Art Gallery, Plymouth	
	Portsmouth City Museums and Records Service	
	Reading Museum Service	
	Royal Albert Memorial Museum, Exeter	
	Saffron Walden Museum, Essex	
	Ulster Museum in Northern Ireland	
	University Museum of Zoology, Cambridge	
	University of Dundee Zoology Museum	
	Worcester City Museum and Art Gallery	
	Zoological Collection, University of Leeds	
	Zoology Museum, Aberdeen University	
	United States of America	
	Academy of Natural Sciences, Philadelphia	
	Alabama Museum of Natural History	
	American Museum of Natural History, New York	
	Arizona State University Herpetology Collection	
	Austin Peay State University Museum	
	Bell Museum of Natural History, University of Minnesota	
	Bishop Museum, Hawaii	
	Burke Museum of Natural History and Culture	
	Burpee Museum of Natural History, Rockford, Illinois	
	California Academy of Science Herpetology Collection	
	Carnegie Museum of Natural History	
	Charles R. Conner Museum, Washington State University	
	Charleston Museum, South Carolina	
	Cleveland Museum of Natural History	
	Cornell University Museum of Vertebrates	
	Dallas Museum of Natural History	
	Fernbank Museum of Natural History, Atlanta	
	Florida Museum of Natural History	
	Georgia Museum of Natural History	
	Great Valley Museum of Natural History, California	
	Houston Museum of Natural Science	
	Idaho Museum of Natural History	
	Joseph Moore Museum, Earlham College, Indiana	
	Kansas University Natural History Museum, Lawrence	
	Life Science Museum, Brigham Young University	

United States of America continued
Milwaukee Public Museum
Museum of Southwestern Biology, Univ. of New Mexico
Museum of Zoology, University of Memphis
New Mexico Museum of Natural History
New York State Museum
North Carolina State Museum of Natural Sciences
Oregon State University Museum
Peabody Museum of Natural History, Yale University
Sam Noble Oklahoma Museum of Natural History
Santa Barbara Museum of Natural History
Texas Natural History Collections, University of Texas, Austin
University of Nebraska State Museum
University of Oregon Museum of Natural History

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MUSEUM HOLDINGS OF THE BROAD-HEADED SNAKE

Appendix 3: *Hoplocephalus bungaroides* specimens reportedly held in Australian and overseas museums. Note: the authors have not personally confirmed the identification of any of these specimens by examination. Records are arranged alphabetically by museum abbreviation (see Table 1) then numerically by registration number. Abbreviations: Coll. = Collected; Confis. = Confiscated; Don. = Donated; NP = National Park; NSW = New South Wales; QNPWS = Queensland National Parks and Wildlife Service; ZSL = Zoological Society of London.

Collection Date	Museum	Rego. No.	Locality details	Other details
-	AM	R 1440	-	Registered 30/08/1893
-	AM	R 1603	La Prouse	-
-	AM	R 1722	La Prouse	Registered 14/04/1895
6/04/1900	AM	R 2696	Mount Wilson	Registered 10/05/1977
11/10/1904	AM	R 3646	Long Bay	Registered 15/05/1977
12 Apr 1905	AM	R 3675	Long Bay	Registered 15/05/1977
28/04/1905	AM	R 3678	Long Bay	Registered 15/05/1977
26/11/1905	AM	R 3847	Long Bay	Registered 18/05/1977
26/11/1905	AM	R 3848	Long bay	Registered 18/05/1977
16 Dec 1909	AM	R 4619	Botany	Registered 22/05/1977
-	AM	R 11179	Randwick	Registered /04/1934
1/11/1959	AM	R 15676	Waterfall	Registered 27/11/1959
Aug 1959	AM	R 18939	Waterfall	Registered 30/11/1962
-	AM	R 18940	Waterfall	Registered 30/11/1962
Apr 1962	AM	R 18941	Mount Keira	Registered 30/11/1962
-	AM	R 18942	Waterfall	Registered 30/11/1962
-	AM	R 18943	Waterfall	Registered 30/11/1962
-	AM	R 18944	Waterfall	Registered 30/11/1962
-	AM	R 18945	Waterfall	Registered 30/11/1962
-	AM	R 18946	Waterfall	Registered 30/11/1962
-	AM	R 18947	Waterfall	Registered 30/11/1962
-	AM	R 21071	Mudgee	Registered 6/02/1964
2 Mar 1964	AM	R 21219	Concord West	Registered 6/03/1964
Feb 1969	AM	R 30345	Springwood	Registered 1/03/1971
8/09/1973	AM	R 40309	Darkes Forest	Registered 9/10/1973
2 May 1970	AM	R 47415	Waterfall	Registered 25/06/1975
22/10/1967	AM	R 70034	Woodford	Registered 1/02/1978
1966	AM	R 74276	Royal NP	Registered 16/06/1978
1966	AM	R 74277	Royal NP	Registered 16/06/1978
1971	AM	R 74278	Waterfall	Registered 16/06/1978
1971	AM	R 74279	Sydney	Registered 16/06/1978
1969	AM	R 74280	Nowra	Registered 16/06/1978
1969	AM	R 74281	Sydney	Registered 16/06/1978
1970	AM	R 74282	Appin	Registered 16/06/1978
1972	AM	R 74283	Waterfall	Registered 16/06/1978
Apr 1972	AM	R 74284	Woronora Dam	Registered 16/06/1978
2 Oct 1972	AM	R 74285	Nowra	Registered 16/06/1978
2 Oct 1972	AM	R 74286	Nowra	Registered 16/06/1978
2 Oct 1972	AM	R 74287	Nowra	Registered 16/06/1978

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2 Oct 1972	AM	R 74288	Nowra	Registered 16/06/1978
2 Oct 1972	AM	R 74289	Nowra	Registered 16/06/1978
2 Oct 1972	AM	R 74290	Nowra	Registered 16/06/1978
1967	AM	R 74291	Helensburgh	Registered 16/06/1978
1968	AM	R 74292	Royal NP	Registered 16/06/1978
1969	AM	R 74293	Royal NP	Registered 16/06/1978
1971	AM	R 74294	Waterfall	Registered 16/06/1978
1971	AM	R 74295	Waterfall	Registered 16/06/1978
1969	AM	R 74296	Sydney Area	Registered 16/06/1978
Oct 1978	AM	R 76338	Colo	Registered 30/10/1978
-	AM	R 82584	-	-
1969	AM	R 84381	Waterfall	Registered 31/05/1979
5 Aug 1978	AM	R 92955	Colo Heights	Registered 14/05/1980
2 Sep 1951	AM	R 103159	Waterfall	Registered 28/10/1981
Jun 1963	AM	R 103162	Heathcote	Registered 28/10/1981
5 Sep 1980	AM	R 103711	Mount Macleod Morgan	Registered 25/12/1981
-	AM	R 107684	Woronora Dam	Registered 7/04/1983
-	AM	R 107685	Bundeena	Registered 7/04/1983
1966	AM	R 107716	Bundeena	Registered 7/04/1983
1966	AM	R 107717	Stanwell Park	Registered 7/04/1983
1969	AM	R 107718	Woronora Dam	Registered 7/04/1983
-	AM	R 107719	Waterfall or Heathcote	Registered 7/04/1983
-	AM	R 107720	Waterfall or Heathcote	Registered 7/04/1983
1979	AM	R 118644	~ 15km NE Bathurst on Road to Sofala	Registered 30/05/1986
17 Oct 1986	AM	R 125335	-	Registered 28/03/1988
-	AM	R 125414	Sydney	Registered 18/04/1988
-	AM	R 128548	Evans Lookout, Blue Mountains	Registered 31/12/1987
-	AM	R 131075	-	Registered 17/05/1988
-	AM	R 131143	-	Registered 19/05/1988
-	AM	R 131144	-	Registered 19/05/1988
-	AM	R 131145	-	Registered 19/05/1988
9 Feb 1996	AM	R 144614	Hazelbrook, Terrace Falls Reserve	-
1/01/1996	AM	R 144720	Kangaroo Valley	Registered 10/05/1996
Jan 1980	AM	R 144876	Captivity	Registered 15/05/1996
Aug 1992	AM	R 147417	Linden, Glossop Road, Blue Mountains	Registered 10/05/1995
Aug 1992	AM	R 147418	Linden, Glossop Rd., Blue Mountains	Registered 10/05/1995
-	AM	R 150348	Sydney	-
Feb 1998	AM	R 151978	Wollemi NP	Registered 24/02/1998
-	ANU	-	Waterfall	-
-	ANU	-	Tiajuara Falls	-
~1963-1964	ANWC	R01868	-	-
~1978-1980	ANWC	R05040	-	Coll. H. Cogger
~1978-1980	ANWC	R05041	-	Coll. Greg Mengden
~1855	BMNH	1855.8.25.??	Australia	Capt. Stokes Collection
~1847	BMNH	1847.7.29.40	Australia; Presented: Earl of Derby	Macgillivray collection

MUSEUM HOLDINGS OF THE BROAD-HEADED SNAKE

~1863	BMNH	1863.6.16.50	NSW; Purchased from: G. Krefft	Registered 16 Jun 1863
~1863	BMNH	1863.6.16.55	Australia	Krefft
~1855	BMNH	1855.10.16.109	Australia	ZSL
~1859	BMNH	1859.6.30.10	Australia; Presented: Dr G. Bennett	-
~1953-1956	FMNH	75118	Waterfall	B Kaspiew
6 Oct 1951	FMNH	97310	Waterfall	W. Hosmer
1876	MCZ	R2525	New South Wales; received Nov 1870	Krefft
1865	MCZ	R3642	Australia;	W. Keferstein
1914	MCZ	R10282	Gelle, Mt. Wilson, Blue Mountains	AM
-	MMUS	R0501a	Mount Wilson	-
-	MMUS	R0501b1	coast near Sydney	-
-	MMUS	R0501b2	coast near Sydney	-
<1837	MNHP	1991-4163	-	-
Dec 1846	MNHP	3301	Australia	J. Verreaux
-	MNHP	7678	Port Jackson	Quoy and Gaimard
Jun 1836	MNHP	7679	Australia - - type of <i>Alecto variegata</i>	Keraudren
-	MSNG	8687	Australia	Acquired 1879
-	NMV	D 4270	Long Bay	Registered 1900-1935
-	NMV	D 4704	Middle Harbour	Registered 1900-1935
1975	NMV	D 51865	Yal Wal, Nowra	-
1975	NMV	D 51866	Royal NP	-
-	NMV	D 65041	Helensburg	Registered 1900-1935
-	NMV	R 12709	Coast Range, Botany Bay	Registered 1900-1935
1856-1875	MZULG	D.R.1883	Melbourne	-
1856-1875	MZULG	R.E. 2657a	-	-
1856-1875	MZULG	R.E. 2657b	-	-
1856-1875	MZULG	R.E. 2657c	-	-
1856-1875	MZULG	R.E. 4221	Melbourne	-
1893	MZUS	626	Queensland	Rolle
1893	MZUS	627	Queensland	Rolle
1882	NMB	2188	Australia	Fritz Müller
2 Aug 1863	NMW	27699:1	Original Label “ West Australien”	-
12 Feb 1869	NMW	27699:2	Original Label “ West Australien”	-
1877	NMW	27699:3	Original Label “ West Australien”	-
~1970s	NTM	R1212	Jarra Fall, Nowra	Coll. Graeme Gow
9 Mar 1975	NTM	R958	Woronora Dam	Coll. Graeme Gow
25 Nov 1972	NTM	R1115	Heathcote	Coll. Graeme Gow
1 Aug 1978	NTM	R1217	Woronora Dam	Coll. Graeme Gow
<1909	OUM	OUM 4641	Sydney	Coll. F.P.Pascoe
6 Jan 1959	QM	J52877	Waterfall	Found under rock
30 Apr 88	QM	J47924	Nowra	Captive specimen
4 Sep 1989	QM	J49761	-	Confis. by QNPWS
-	QM	J61008	-	Captive bred
Aug 1862	RMNH	RMNH 1141	Botany Head, Sydney	gift of AM
No date	RMNH	RMNH 1142	Museum Sydney	-

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-	RMNH	RMNH 1335	"Nouv. Hollande" (Australia)	Gould
1849	RMNH	RMNH 1336a	"Nouv. Hollande" (Australia)	Frank
1849	RMNH	RMNH 1336b	"Nouv. Hollande" (Australia)	Frank
2/06/1915	SAMA	R00463	La Perouse	Don. AM; now missing
1967	SAMA	R12099	Kuringai Chase	W. Irvine
1967	SAMA	R12100	Kuringai Chase	W. Irvine
1967	SAMA	R12101	Kuringai Chase	W. Irvine
2/07/1971	SAMA	R13433	Woronora River	H. Ehmann
Sep-73	SAMA	R14116	Sydney	G.N. Coombe
1980s	SDNHM	63864	-	sent on exchange by AM
1911	SMF	20532	eastern Australia	Don. O. Frank
~1920s	UIMNH	95151	-	purchased from AM
<1872	USNM	8050	-	Catalogued about 1872
1911	USNM	56166	Sydney	Coll. Julius Hurter
8 Aug 1964	WAM	R53761	Woronora Dam	G.F. Gow
9 Mar 1975	WAM	R53762	Woronora Dam	G.F. Gow
9 Mar 1975	WAM	R53763	Woronora Dam	G.F. Gow
1860s-1870s	ZMB	4443	Sydney	dealer Salmin
1860s-1870s	ZMB	4444	Sydney	dealer Salmin
1860s-1870s	ZMB	5208	NSW	Kreff
13 Sep 1913	ZMB	63510	Donated by Berlin Zoo	-
1860s-1870s	ZMB	63755	Australia	Kreff
1860s-1870s	ZMB	63756	Australia	Kreff
1867	ZMB	63757	Recorded incorrectly as Adelaide	Schomburgk
1867	ZMB	63847	Sydney	Schomburgk
1868	ZMH	R08213 514	Australia	-
1861	ZMH	R08212 763	Sydney	Kreff
Sep 1862	ZMUC	R65270	Sydney	-
Sep 1862	ZMUC	R65271	Sydney	-
Aug 1867	ZMUC	R65272	Australia	Don. Günther
1920	ZSM	387/1920	NSW	Destroyed in WWII
1928	ZSM	36/1928	NSW	Destroyed in WWII